

Participation and Weight Loss Outcomes among High-Risk Women with and without a History of Gestational Diabetes Mellitus (GDM) in an Adapted Version of the Diabetes Prevention Program (DPP).

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Background and Research Objective

Introduction

- Women with a history of GDM are at significant increased risk of developing Type 2 diabetes mellitus (T2DM).¹
- In United States the prevalence of GDM has increased from 3.7 in 2000 to 5.8 per 100 births in 2010.²
- In Montana, the prevalence of GDM has increased from 2.1% in 2000 to 3.9% in 2014.³
- The National Institutes of Health's Diabetes Prevention Program (NIH DPP) demonstrated that incidence of T2DM among women with history of GDM can be significantly reduced through lifestyle intervention.^{4,5}

Research Objective

To compare participation, cardiometabolic risk factors, self-monitoring behaviors, and weight loss outcomes in women with GDM and without GDM at high-risk for cardiovascular disease (CVD) and T2DM enrolled in an adapted DPP lifestyle intervention.

Summary of Findings and Public Health Implications

Summary of Findings

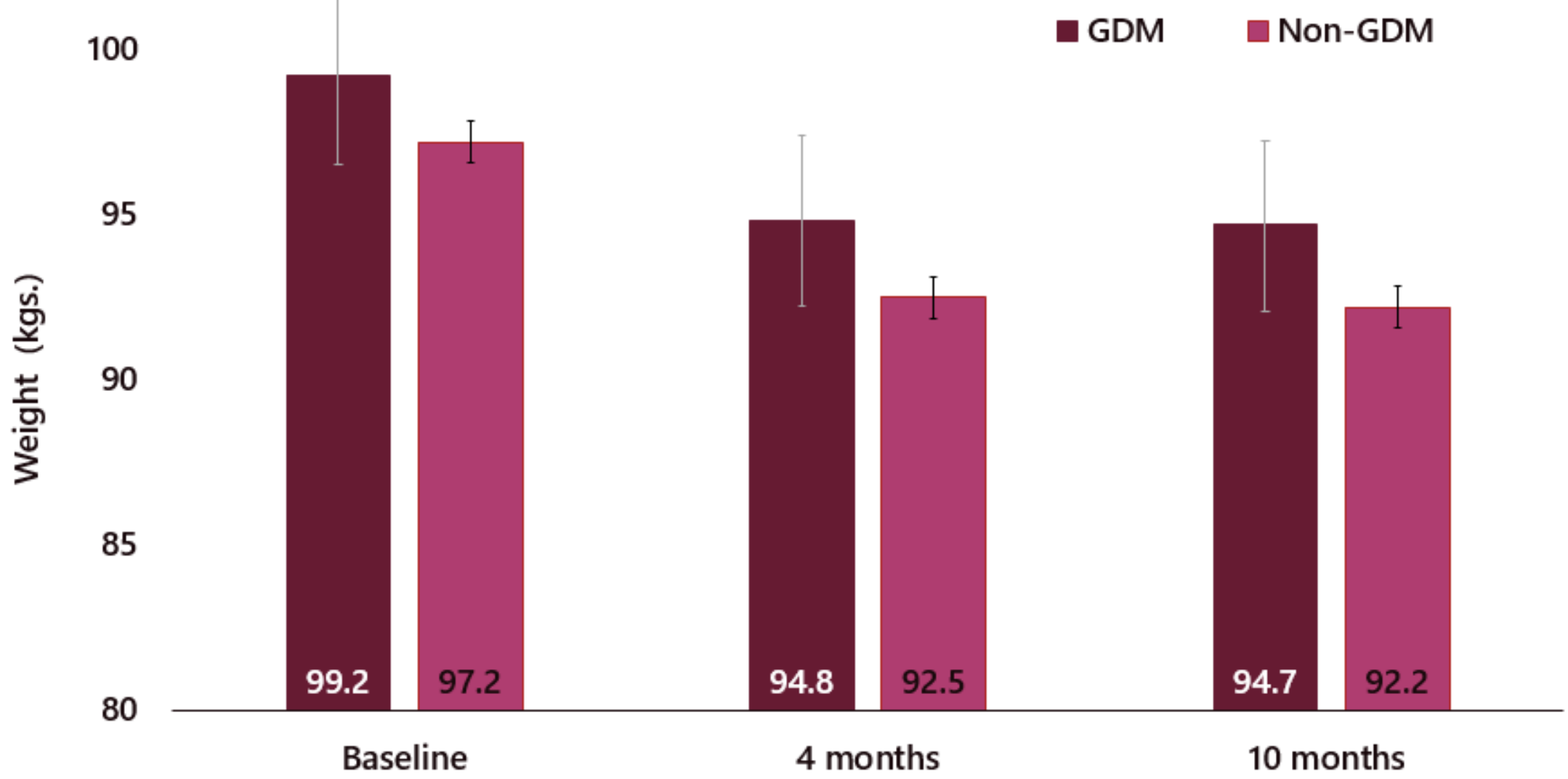
- The Montana DPP enrolled 255 (5%) women with history of GDM and 4,408 women without GDM from 2008 through 2014.
- Participants with GDM were significantly younger compared to participant without GDM.
- There were significant differences between GDM and Non-GDM groups in reporting history of parental diabetes, diagnosis of hypertension and having a baby >9 lbs.
- No significant differences were found between GDM and Non-GDM groups in class attendance, self-monitoring fat intake, achievement of physical activity or weight loss goals.
- After adjusting for age and other factors, there continued to be no differences between GDM and Non-GDM groups in 5% weight loss (AOR 0.78; 95% CI 0.55-1.10) or those achieving the 7% weight loss goal (AOR 0.98; 95% CI 0.68-1.42).

Public Health Implications

- The implementation of a structured evidence-based lifestyle behavior change program such as the DPP is a highly effective method of reducing the risk of T2DM and CVD.
- The DPP lifestyle intervention for women with GDM provides substantial health benefits. Physicians should refer these high risk women to DPP services when the services are available.

Study Results

No Significant Difference were Detected in Weight Loss between Groups



No Significant Difference were Detected in Achievement of Physical Activity and Weight Loss Goals between Groups



~56% of women with and without GDM stayed active for ≥2.5 hours (150 min.) per week over the course of the 10-month program.

26% with GDM
29% without GDM lost 7% of their body weight.

Significant Differences were Detected in Cardiometabolic Risk Factors at 10 months in Both Groups (only measures with statistically significant changes are shown)

Non-GDM	Baseline			10 months		Mean difference (10 months-baseline)	P**
	n*	Mean	SD	Mean	SD		
Triglycerides (mg/dL)	1,632	155.0	75.1	140.6	68.0	-14.4	<.0001
HDL cholesterol (mg/dL)	1,648	52.1	12.2	53.6	12.3	+1.5	<.0001
LDL cholesterol (mg/dL)	1,640	124.2	32.9	118.8	31.6	-5.4	<.0001
Total cholesterol (mg/dL)	1,538	207.1	37.0	200.7	35.1	-6.4	<.0001
SBP (mmHg)	1,454	130.4	16.1	126.7	15.2	-3.7	<.0001
DBP (mmHg)	1,444	80.2	10.3	78.0	9.4	-2.2	<.0001
GDM							
Triglycerides	100	155.9	69.5	132.8	63.0	-23.1	<.0001
HDL cholesterol	101	49.4	13.3	51.8	12.7	+2.4	<.0001
SBP	83	126.9	12.9	123.7	12.6	-3.2	<.0001

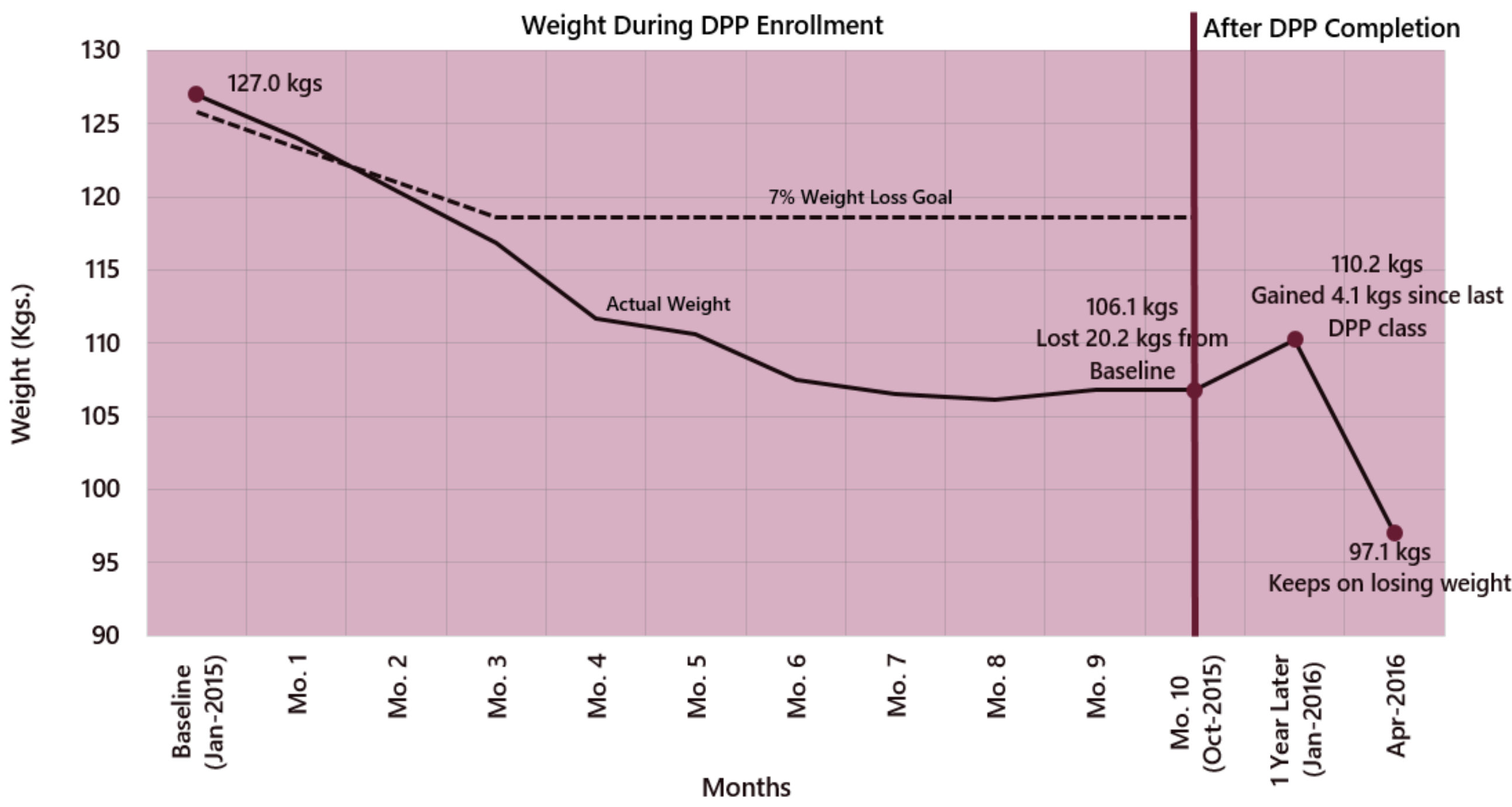
*Same sample size at baseline and 10 months. **Paired t-test (P-value ≤0.05).

Tasha's Results



Tasha Bell, age 32, GDM DPP participant, Jan.—Oct., 2015
Image courtesy of Tasha Bell. Used with permission.

Tasha's Weight During and After DPP Enrollment.
Tasha lost 29.9 kilos (65.9 lbs.) by tracking calories and fat intake, and being physically active.

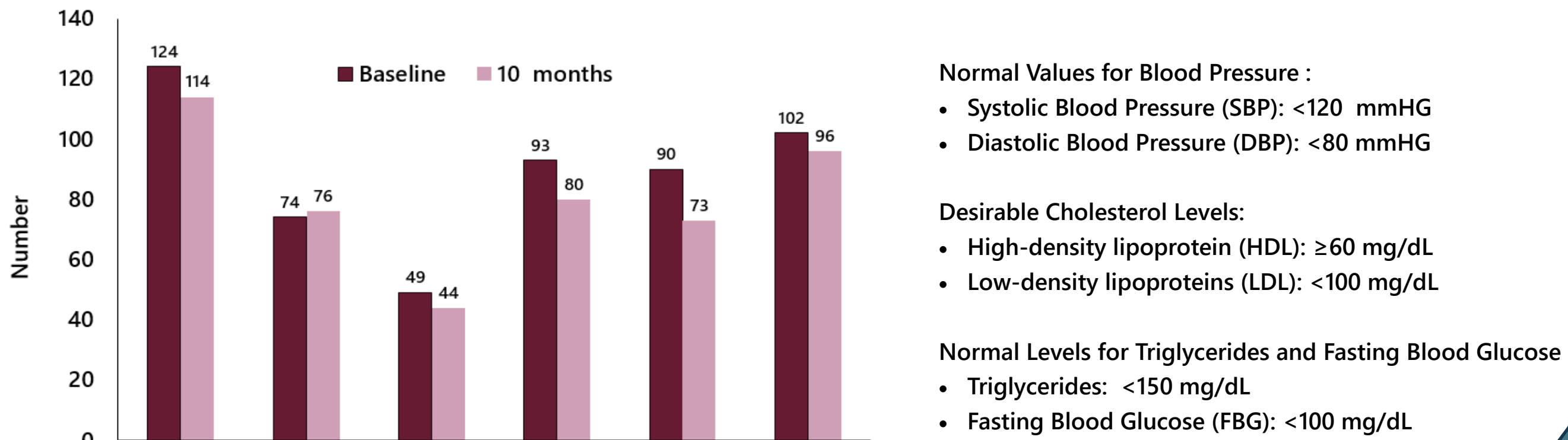


"Some things I have accomplished since starting and completing ACT NOW [DPP], Run on a treadmill, run outside, completed a 10k and actually run part of it, run part of a 5k. I took 24 minutes off my 10k time and 13 off of my 5k time. I can keep up/sometimes kick my sisters butt at the gym. I have proper form to lift and enjoy lifting, have the confidence to lift because I have put in the time at the gym. I have learned the importance of eating right and exercise. Historically I would do one or the other but never both together and never consistently."

Tasha Bell May, 2016.

Tasha's Cardiometabolic Risk Factors at 10 months.

Lab results showed substantial improvements in fasting blood glucose, triglycerides, cholesterol, and blood pressure.



Normal Values for Blood Pressure :
• Systolic Blood Pressure (SBP): <120 mmHg
• Diastolic Blood Pressure (DBP): <80 mmHg

Desirable Cholesterol Levels:
• High-density lipoprotein (HDL): ≥60 mg/dL
• Low-density lipoproteins (LDL): <100 mg/dL

Normal Levels for Triglycerides and Fasting Blood Glucose :
• Triglycerides: <150 mg/dL
• Fasting Blood Glucose (FBG): <100 mg/dL

Methodology

Data Analysis and Intervention Design

Data Source: Montana DPP, 2008-2014.

Inclusion Criteria: Participants from 19 DPP sites who attended ≥1 sessions. 255 women with GDM and 4,408 women without GDM (N=4,663).

GDM Status: GDM history is collected at intake. Participant met the GDM criteria if stated as female and reported history of GDM.

Intervention: 10-month intensive lifestyle intervention; 16 weekly core sessions followed by 6 monthly post-core sessions.

Curriculum: CDC National DPP curriculum. Sessions include healthy eating, physical activity, and problem solving.³

Lifestyle Coaches: Trained health professionals (RN, RD, CDE, PT).

Participant Program Goals: Self-monitor dietary intake and physical activity, decrease fat gram intake, increase moderately intense physical activity to ≥150 min/week, and achieve 7% weight loss.

Participant Eligibility Criteria: Aged 18 years and older, BMI ≥25.0 kg/m², plus one or more risk factors for CVD and type 2 diabetes.

Analysis: Multivariable logistic regression models to assess the odds ratios of 5% weight loss and 7% weight loss goal. Independent t-tests for continuous data and chi-square tests for categorical data were used to compare the baseline characteristics between the two groups. Intention-to-treat analyses were performed using the last observed weight of participants enrolled in the program to calculate mean weight loss.

Limitations

- Small sample size for GDM cohort.
- Self-reported GDM status, physical activity and self-monitoring fat intake.
- Non-randomized study.

References

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